THE MARINE RECORD.

DEVOTED TO COMMERCE, ENGINEERING AND SCIENCE.

$2.00 PER YEAR. ESTABLISHED 1878. 10c. SINGLE COPY.

VOL. XVIII. CLEVELAND, OHIO, JULY 18, 1895. NO. 29

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To consider and take action upon all general questions relating to the navigation and carrying business of the Great Lakes, maintain necessary shipping offices and in general to protect the common interest of Lake Carriers, and im rove the character of the service rendered to the public.

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THE CUP DEFENDER.

The Defender's main boom tackle contains some novel features. There are two parts to it, the sheet itself and the straps on the boom, or, more properly speaking, bridles on the boom. A piece of wire rope is made fast about six feet from the end of the mainboom and then comes inboard to just over the traveler, and there runs through a single block of galvanized iron. The rope then runs back out to the boom where it started from. This block is fastened by a three-link chain to a similar tackle forward, which runs in and is made fast to the boom about one-third way in from the stern. There is a triple block on the traveler and three single blocks on the links of the chain. This bridle takes the strain off of any one part of the boom and equalizes the pull, so that there is little danger of buckling the mainboom in a breeze.

The mainsail has no reef points in it; that is, no nettles. The holes are there, though, and it would be an easy matter to lace in either a single or double reef.

LARGEST CARGO STEAMER AFLOAT.

The White Star Line will shortly add another vessel to its already extensive fleet, the Georgic, built for that company's freight service, having been launched a few days ago at Belfast, where she was built by the Harland & Wolf Co. The Georgic, which is the largest cargo steamer afloat, is the thirty-fourth vessel built by Harland & Wolf for the White Star Line. She registers 6,500 tons net and 10,000 tons gross. She is 575 feet in length and is fitted with two sets of triple expansion engines of the latest type.

The Georgic will be arranged for the cattle carrying and live stock trade, as well as for general freight. She will have accommodations for over 900 head of cattle and will have also permanent stalls for a large number of horses. She will engage in the New York-Liverpool service.

OFFICIALLY ANNOUNCED.

The following general order was promulgated by the postoffice department, and a copy sent to postmaster John J. Enright yesterday:

Order No. 464—Establish a full station of the postoffice at Detroit, Mich, with facilities for the transaction of money order and registry business, located at the dock, foot of Bates street, to be known as Station E, Marine Station.

W. L. WILSON,
Postmaster-General.

Postmaster Enright, shortly after he inaugurated the marine postoffice service at this point, had a conference with United States Inspector Conger, of the Weather Bureau, at which time they both decided that it would be a matter of great interest to vessel men for the marine postoffice to deliver storm warnings to captains of all vessels passing up and down the river.

The Postmaster-General, having had the matter brought to his attention, and considering its great importance, as far as marine men are concerned, instructed the postmaster to deliver to masters of passing vessels weather information and warnings of storms, as received.

A SUBSTITUTE FOR WOOD.

Several months ago the board of inspection and survey of the Navy Department was directed to make an investigation with a view of obtaining some practicable substitute for wood in fitting naval vessels. The desire for a substitute was the fact that a lighter material was wanted if possible, one that would not take so much space in the vessel, and more than anything else a material that would not splinter. It was also desirable to have a non-combustible substance. The board has made a report to the Secretary of the Navy, and some its recommendations have been adopted by him, and it is probable that several of the new ships will be fitted with the new material as a substitute for wood.

One of the best materials which have been found by the board is a wood substitute composed of waste cork, or any cork. This is subjected to 400 degrees of heat, and it is then pressed into blocks of any desired size. It can be sawed into thin strips or handled very much as wood is handled. Cork has a gum which great heat melts and glues its particles together in a compact mass. After being pressed it sticks together as tightly as if it had grown that way. The cork boards may be made heavy or light, as wanted. Some of the lighter kinds are used in the walls of refrigerators. It is a non-conductor and can scarcely be made to burn. This material is used in the place of wood in German vessels. Commander Bradford, who made the search and examination of this particular substitute, found that the Germans were using it under a patent taken out by John Smith, of New York, and that companies in the United States had obtained rights for its manufacture here.

LATEST PANAMA ENGINEERING SCHEME.

One of the latest engineering schemes concerning the Panama Canal proposes the construction of four locks—two at each end of a central level only 75 feet above the ocean—instead of the old plan of several levels and from eight to ten locks between 122 and 175 feet above the sea. As this would involve an increased amount of rock and soil cutting, it is proposed by M. Bartissol, the author of the plan, to dispose of the extra material thus excavated by constructing a 13-foot tunnel, some 30,000 feet in length, through which the debris will be washed, water for this purpose to be brought through an open channel from a dam on the Chagres River; that is, there would be allowed a fall of about one foot to every thousand of length, the current filling the tunnel to a height of some ten feet, a flow of ten feet per second it is estimated being thus secured, discharging 1,000,000 cubic meters daily. One hundred shafts cut into this tunnel would empty into it only about 40,000 cubic meters of solid material in 24 hours, so that only about 4 per cent of the discharged mixture would be earth or stone.

NEW SECTIONAL MARINE BOILER.

A sectional marine boiler has been provisionally patented by Mr. W. H. Wilson, 191 Waterloo Square, Camberwell Green, London, S. E., which combines the principle of water tubes arranged over an ordinary furnace, and a cylinder through which numerous fire tubes are passed. The invention also provides automatic closing valves for the ends of the several sections of water tubes, so that any water tube may be ruptured without much escape of steam or loss of pressure; other important features are also introduced. The products of combustion first circulate between the rows of water tubes, and the partly cooled gases then pass through the smoke tubes in the cylinder, which abstracts the remaining effective heat. This plan is expected to make the boiler one of the most economical in fuel yet brought out, and to avoid over-heated fire tube ends. There is also a large water surface and steam space, and being in sectional parts the cylinder and other sections can be passed the hatchways for erection in the hold of the vessel without tronble. The height from floor to top of cylinder is about two-thirds the height of ordinary return tube shell boilers.

NEWS AROUND THE LAKES.

CHICAGO.

Special Correspondence to The Marine Record.

Capt. H. Bundy, the lake missionary denies the story that he has sold the mission steamer Glad Tidings.

The water in St. Joseph River is the lowest ever known, boats being able to go only five miles up the stream.

The dismasted schooner Naiad has been towed from Charlevoix to Manitowoc, where she will receive repairs at H. B. &. G. B. Burger's shipyard.

The tug Sunbeam has been sold by J. H. Brunges to the Bay de Noque Co. and will go to Nahma, Mich. The price was $5,000. She will be used as an excursion boat.

The schooner Ida Olsen, which left Gladstone with lumber for Chicago on the morning of the 14th instant, went ashore in the thick smoke that prevailed soon after she left port. She was released the same evening.

At the Chicago Shipbuilding Co.'s shipyard at South Chicago, the steamer John Mitchell is in dock for part new for foot and keel, some new bottom planking and recalking. A new rudder is being made their for the steamer Fred Kelley.

P. H. Fleming & Co. report the charters of the steamer H. S. Richards and barge James Mowatt for wheat to Toledo at 1½ cents; the barge Marengo for corn to Port Huron at 1⅛c; and the steamer Ionia for 62,000 bushels of wheat to Toledo.

The steamer Ionia got away from the A. S. Richardson Fueling Co.'s Market Street dock Tuesday, after unloading her cargo of 1,800 tons of best Black Horse coal. The barge Amboy, with a cargo of the same kind of coal, followed the Ionia at that dock.

The parents of Maurice DeWitt, who resides at 449 West Erie Street, Chicago, will feel very thankful to receive information of him. He left home 3 years ago to go sailing on the lakes. He was at that time 18 years old, had fair complexion, blue eyes and very light hair.

At Miller Brothers' shipyard the steamer Annie Laura has been in dock for repairs to her stern bearings; the steamer T. W. Palmer to have her wheel fastened; the schooner York State for a new fore-foot; the schooner Iver Lawson, the steamers Arizona and Belle and the tug Welcome, to have leaks stopped.

Capt. James Rice, who took the little steamer Australia to Buffalo, returned to Chicago Monday. He says the steamer made a very successful trip, and proved her seaworthy qualities. The Buffalo police authorities went on board the Australia at Dunkirk and made the trip on her to Buffalo. They are greatly pleased with the bargain they made with the Marine Iron Works, of Chicago.

A pile-driver owned by the O. B. Green Dredging & Dock Co., while working on the dock near the east draw of Lake Street Bridge Monday afternoon, capsized, and the frame, hammer, engine and boiler slid off the deck of the scow into the river. The men working on the pile driver were also precipitated into the water, but were rescued. The wreckage, which blocked the the east draw of the river, was raised on Tuesday.

The Standard oil barge line between Whiting, Ind., and West Superior, Wis., which was to have made its initial trip Monday, will not begin operations before the end of the two weeks. The pier is now 880 feet long. The contract calls for its completion July 22, but at the rate the work is going on now it may be later than this before it is finished, The two barges are completed and ready for business. They have a capacity of 8,000 barrels each.

The foreign underwriters having insurance on the Lehigh Valley liner Cayuga, sunk in the Straits of Mackinaw, have requested C. A. McDonald & Co. to receive bids for raising the wreck. The terms of the contract are to be "no cure, no pay." All the lake wrecking companies will be invited to submit bids. It is by all odds the biggest wrecking job ever on the lake as the boat with iits cargo was worth $250,000. As the steamer lies in 101 feet of water and is flat on its side, the work of bringing the wreck to the surface has many perplexing features, even with the use of the most modern wrecking devices.

Last Sunday afternoon H. Tittsworth of South Haven took his new yacht, Artist, out for its trial trip in company with the builders, Messrs. Coats & Stillson. When four miles north of the harbor, about 3 o'clock, a squall struck and capsized it. The life saving crew went out immediately and soon after the tug McClure, but the yacht was so far away that the men were all drowned before the crew could reach them. All found was a cap belonging to Mr. Stillson. The reason for the boat sinking so quickly was that it held a great amount of ballast, which could not be shifted, and the yacht being new, they had not yet put in any air cans to buoy it.

MILWAUKEE.

Special Correspondence to The Marine Record.

H. Guloki has purchased the tug Herman at U. S. Marshal's sale for $2,900.

The steamer City of Traverse was laid up here for a few days last week for repairs.

During the week ended last Saturday 27 boats arrived here with coal aggregating 43,765 tons.

It has been proposed to cut down the wages of sailors 25 cents a day, but the men have protested so vigorously thus far that it has not been done as yet. The rate is and has been $1.50.

The Retail Coal Merchants' Association, which was organized about a month ago, has been holding private meetings to see if former prices cannot soon be re-established, and the present rate war ended. The retail dealers say that the fire at B. Uhrig & Co.'s docks which put damaged coal on the market, is largely the cause of the war. An effort is being made to get the Northwestern Fuel Co. to restore the former prices and the agent of that company will do so if all other representatives will fall in line. Not a ton is being placed for future shipment at the present prices.

CLEVELAND.

Special Correspondence to The Marine Record.

The Chase Machine Co. is doing a good deal of machinery repair work on tugs this season.

Capt. W. S. Mack has just returned from Saegertown, Pa., where he has been recruiting his health.

Capt. Alfred Mitchell, of the vessel brokerage firm of Mitchell & Co., is erecting a handsome residence on the south side of Euclid avenue, between Lincoln and Bolton avenues.

The ice barge Little Jake is in the Cleveland dry-dock for a recalking. Manager Brown has added a handsome verandah on the dock side of the office, where he can loll while he issues his orders.

At the Shipowners' dry-dock the schooner Sage has been getting a leak stopped. The schooner Foster is having an extensive job of calking done, and the Elphicke is getting a new wheel.

It is estimated that the value of the hulk of the St. Magnus as she lies in the river is about $3,500, the sum which Murphy received for raising her. Surveyors Benham, Rice and McLeod figure the damage to hull and machinery at $17,500 and add the loss of outfit, etc., which brings the total up to $21,000, making the boat a constructive total loss.

The river improvement commission is hard at work, and the members have recommended the removal of the Valley bridge and its abutments at West River street and the old river bed, and for its renewal in such a manner as not to obstruct navigation; for the removal of the center pier of Willow street bridge to one side of the river, which means a new bridge, and for the setting back of the lines of the Nypano dock so as to cut off the sharp knuckle just above Willow street bridge. The commission will meet again next Monday.

Mr. Cobb, of Detroit, is in Cleveland on a mission which is meeting with hearty approval on the part of the vessel interests. He proposes to institute a marine branch of the postal service in and about Cleveland harbor, which may extend to the delivery of mail orders to vessels passing outside, in addition to arrangements for prompt delivery and collection of mail at all parts of the inner and outer harbor. A petition to the postoffice authorities to ratify this innovation is now being circulated.

The new schooner building at the Globe Iron Works Co.'s shipyard for the American Transportation Co., is almost ready for launching, and the date of the event will be announced in a day or two. Work on the new boat which is to take the place of the lost steamer Norman is moving slowly. Her engines will be duplicates of those in the Globe—24, 39 and 63 by 42 inches stroke. The new boat will have four boilers 10 by 11 feet, instead of two 162 foot boilers, as in the Globe. Each boiler will have two 40½-inch furnaces. The canal steamer Alpha will soon be ready for service and work on the canal barges is progressing rapidly.

The degree to which the Euclid Beach Park Co. has developed the short distance excursion business with its two boats the Duluth and Superior, is remarkable. From July 2, when the water service to Euclid Beach began, the company has carried up to date 22,800 passengers. The pleasant ride of an hour to the beach is considered one of the features of that very popular resort. Mr. E. D. Gladwich has assumed the management vice Mr. A. E. Thompson, who has resigned in order to devote his entire time to the agency of the Union Line. Capt. Richardson, who sailed the Duluth between Chicago and the World's Fair grounds in 1893, is again in command of that steamer, and Capt. McCoy has charge of the navigation of the Superior.

Material is beginning to come in slowly for the immense new steel boat which the Cleveland Ship Building Co. will soon start on their own account, and which will, before completion, be purchased by the Wilson Transit Co., which secured the Yuma in the same manner a couple of years ago. The keel will not be laid until after the launch of the steamer Yale, now building to the order of R. R. Rhodes and others. The Yale will be placed in the water on either the last Saturday of July or the first Saturday in August, this not having yet been definitely decided upon. The blowing engines which the Cleveland Ship Building Co. is constructing for the Illinois Steel Co., are being pushed ahead rapidly.

DULUTH AND SUPERIOR.

Special Correspondence to The Marine Record.

Last Friday the Duluth, Mesaba & Northern shipped 13,700 tons of ore from its Duluth dock.

The first ore cargo was loaded from the Duluth and Winnipeg docks in Allouez Bay last Saturday, upon the schooner George W. Adams.

John Birkenbine, the iron expert of the U. S. Geological Department, whose statements and statistics are quoted all over the civilized world, was in Duluth this week on a visit to the Mesaba Range. It was hinted that his presence here had something to do with an effort to start the West Duluth Blast Furnace.

Capt James Davidson's new steamer, Rappahannock, came in last Monday on her maiden trip, with 8,000 barrels of salt. She had a party of guests on board. The Rappahannock is the largest wooden vessel propelled by steam She is 340 feet over all by 43 feet beam and 23 feet depth. Capt. W. C. Pierce is in command of her, and G. C. Lawrence is chief engineer. Both were formerly of the Nicaragua.

The new tug, B. B Inman, reached Duluth from Port Huron, last Thursday. The tug had made a trial trip from Port Huron to Cleveland, and brought up a party of young folks. She made sixteen miles an hour on Lake St. Clair, and her engines develop d 720 horse power. She has a fire pump, steam capstan. and everything pertaining to a modern tug. Captain Fred. Bensan, and Engineer Charles Maples, both from the Carrington, will operate her. She will not go into commission until next week, as it is desired to make some minor changes in her machinery and to complete her fitout. She was built by the Jenks Ship Building Co., of Port Huron.

SANDUSKY.

Special Correspondence to The Marine Record.

Capt. Monk is preparing to launch his new tug, and it is expected that she will be placed in the water some time this week.

On Saturday in five hours and twenty minutes the employes on the docks put into the hold of the schooner B. W. Parker sixty-two big cars of coal and for the day 124 cars. This is handling coal by derrick with almost as much despatch as a car dumping machine.

Four big lake carriers were loaded with coal at the Short Line docks last week in three days, from Thursday morning until Saturday evening. This is remarkably quick work, when it is taken in consideration that only one crew is employed on the docks, the loading of vessels at night having been discontinued.

The past week has been an unusually active one on the Baltimore & Ohio docks. A large amount of lumber, telegraph poles and railroad ties have been received

from upper lake ports and the cargoes have been immediately shipped to points along their line. The B. & O. docks have been the busiest place along the harbor front and a large force of men are now employed.

Business on the Big Four docks is on the boom, and a large force of men are engaged at work unloading vessels. Early this week fourteen vessels were at one time lying at the docks waiting to be unloaded. The handling of pulp-wood on the Big Four docks is rapidly increasing, and extra train crews are being put on to keep place with the freight business out of this city. The pulp-wood is shipped from Herring Bay, Canada.

The big steamer Thomas Maytham, in tow of the tug Peerless, was run onto a big boulder lying in the channel off the Big Four docks last Thursday morning. The tug men claim that the boulder in the channel was due to the carelessness of the dredge men who are at work on the harbor front. In dredging the channel the dredge men came across the boulder, and being too big for their dipper they rolled the boulder into the middle of the channel and allowed it to remain there. No notice was given the vesselmen, and when the Maytham was being taken out she struck. Two tugs were required to pull her off. It is not thought that the steamer's hull has been damaged.

The scarcity of Lake Michigan tonnage gives the Baltimore & Ohio officials at this port considerable difficulty. A large amount of coal is in the yards awaiting shipment. Of all the vessels now in the harbor not one of them could be chartered for Lake Michigan ports, and they are now endeavoring to secure vessels from some other Lake Erie port.

The tug war at this port show no signs of abatement, and on Sunday morning rival tugs chased each other as far up as Algonac to get a tow. It is becoming a common occurrence for tugs to go up to the Detroit river and down as far as Cleveland to get the desired vessel.

DETROIT.

Special Correspondence to The Marine Record.

The schooner Dauntless has been getting an overhauling in Clark's dry dock.

The tug J. L. Miner got a new wheel at the upper dock last week. The steamer Hattie, and yacht Roberts also received some minor repairs, and the schooner Golden Rule had a leak stopped.

The steamer Norseman has been getting repairs to her machinery at the Riverside Iron Works.

The gradual fall of the water became noticeably apparent three seasons ago, when the Detroit and St. Clair Rivers were at that time from 10 inches to a foot below what is termed the channel level. Last year a further drop was noticeable. There were times that a lowering of water levels of 15 inches were noticeable, and in August 18 inches were quoted. But it remained for the season of 1895 to knock a hole in the record, until now the water level ranges from 20 to 24 inches lower than the usual channel level.

The M. H. Boyce has received a new wheel at the big dry dock.

At the Detroit Dry Dock Co 's Wyandotte yard, work is progressing on the new Cleveland and Buffalo liner. The machinery is well advanced, but owing to the fact that certain shapes needed to begin the erection of the hull have not yet been furnished by the Philadelphia firm from whom they were ordered, the work in the yard has scarcely begun. The other material, including the Otis steel for the shell plates, is accumulating rapidly. General Manager Newman, of the C. & B. Line, was at the yard last week.

BUFFALO.

Special Correspondence to The Marine Record.

The City of Rome has been getting new blades on her wheel at Mills' dry dock.

Secretary of War Lamont arrived on Monday afternoon on the Steamer North Land, having come down from Duluth on her as a fitting close to his inspection trip in the far west. He found the trip most delightful. Assistant General Manager F. P. Gordon took the best of care of the Secretary, and was doubtless careful that he should have an opportunity to see where further lake improvements would be of benefit. At the Sault the Secretary was tendered a military reception, the regulars turning out in full dress uniform with their band.

The steamer Periwinkle got away for Bay City last Saturday, after receiving a thorough overhauling under the direction of her new owner, Capt. Felcher. She will engage in the excursion business on Saginaw Bay.

A steam steerer made by a Cincinnati firm was placed on the tug Cascade, but did not prove to be a success and was taken out. A steerer invented by David Welch of the Fire Department will be put on her. This steerer was recently put on the tugs Babcock and Fabian, and gives good satisfaction.

The official number of the new tug James Kennedy is 77,190; gross tonnage, 10.80; net tonnage, 7.35.

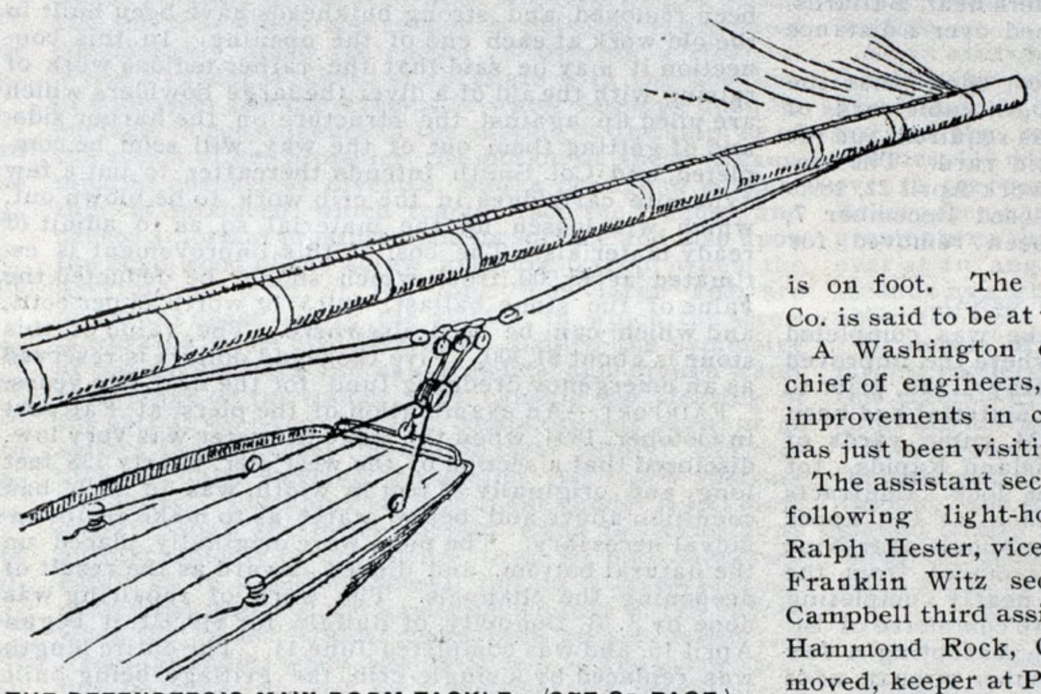
Mayor Jewett recommends that the city take the bull by the horns in the sea wall controversy, take possession of the strip and consequently fight the case as a defendant in any legal proceedings.

Governor Morton has taken up the cause of the canal men, who have been complaining to him of what they charge are the exorbitant and illegal charges of the elevators. He has written, stating that he will do what he can to set the matter right, and asking for further facts. The boat men are much encouraged and are mapping out a plan of campaign.

Tug men and others express the opinion that the submerged end of the breakwater should be marked by a red light at night. A great deal of confusion would be avoided if the light were placed there.

Capt. and Mrs. John Johnson celebrated the 34th anniversary of their marriage at Crystal Springs, with their friends, last Thursday. Capt. Johnson is a member of the towing firm of Hand & Johnson.

The Union liner Owego arrived Tuesday and went into the Union dry dock to ascertain what damage she had received from going up on Racine reef. The damages proved to be very heavy, and will necessitate her remaining some time in the dock.



THE DEFENDERS'S MAIN BOOM TACKLE. (SEE 3D PAGE.)

Capt. Charles Maytham, who has been in ill-health for some years, left last night on the steamea North Land for Duluth, and from there he will go to the Pacific Coast. Upon his return he will again resume business with the Maytham tug line.

The Northern Steamship Co. will place steel buckets on the twin screws of the North West on her arrival Thursday. In order to avoid delay, only two buckets will be put on, and on the following trip the other two will be placed on her. Steel buckets are much lighter than the cast-iron ones now used, and it is thought that her engines will turn up much faster. If they prove a success, the North Land will also be equipped. From the time that the North Land left Buffalo on her laft trip her engines made 676,943 revolutions until she stopped outside of the piers at Duluth. On the down trip her engines registered as making 679,369 revolutions. In comparing the port and starboard engines, the port registered 340,160 and the starboard 539,209 revolutions for the down trip. For the same trip up, and practically steering the same course, the engines of the North West turned up about 1,000 turns more. Duncan Frazier, chief engineer of the line, intends to make tests between the two boats, similar to those made on the steamer Harvey Brown, only on a larger scale. The North Land was repainted this week.

The steamer Pilgrim was libeled last week by the Mills Dry Dock Co. on an unpaid repair bill of $1,233. She was soon afterward bonded and released, and may fight the suit.

SAULT ST. MARIE.

Special Correspondence to The Marine Record.

Capt. David Tate entered upon his contract of taking care of the buoys on St. Mary's River Monday. Capt. Tate will give his entire attention to the performance of the duties of his office, and he says the marine interests will have no further reason for complaint if keeping the buoys in their right places will avoid it. He asks the co-operation of vesselmen, and any complaint left at the canal office will have prompt attention.

Martin Lynch's contract for laying the floor of the new lock at the American canal has been completed.

James Pullar is enlarging his shipyard facilities. New ways are being put in and many improvements made to the plant, which, when completed will admit of all of the smaller classes of craft being hauled out of the water and repaired.

J. B. Donnelly, of Buffalo, who has the contract for building the timber work and dredging the approaches to the new lock, was in the city Monday. Mr. Donnelly was accompanied by his superintendent, Jos. Stone, of Buffalo, who will represent Mr. Donnelly here. Hingston & Wood, dredgemen, of Buffalo, will do the dredging and the work will be commenced in a week or ten days.

A careful survey of the eastern and western approaches to the Canadian lock would recommend that boats using it would load not to exceed 14 feet, on account of the boulders in the channel. The approaches are not properly buoyed.

FLOTSAM AND JETSAM.

The opening of the Canadian Sault Canal is now set for August 15.

Construction on the Great Lakes comprises 93 vessels, against 89 last year.

The George H. Dyer had repairs made at the Union dry dock last week of the damage caused by the Curtiss six weeks ago.

A movement looking towards the formation of a syndicate to control the dry docks in New York City, is on foot. The Guarantee Trust and Safe Deposit Co. is said to be at the head of the deal.

A Washington dispatch says that Gen. Craighill, chief of engineers, is very enthusiastic over the lake improvements in charge of Gen. O. M. Poe, which he has just been visiting.

The assistant secretary of the treasury has made the following light-house appointments in Michigan: Ralph Hester, vice Malcom Donald, removed; Keeper Franklin Witz second assistant keeper, and W. L. Campbell third assistant keeper of fog signal station at Hammond Rock, Chas. T. Rosell, vice Carl John, removed, keeper at Portage River Station.

The reports of the operations of the life-saving service for the past year make a very good showing when compared with previous years. There were 550 disasters, 170 of which were on the Great Lakes. The property lost is $1,254,000. Of the 4,618 persons aboard vessels in distress only 25 were lost, as against 680 last year. The value of property lost decreased during the year nearly one-half. The total number of vessels lost was 55, as against 91 last year.

The new Eddy-Shaw steamer Penobscot will be launched at Wheeler's yard, August 1.

Secretary Keep and Capt. McKay, of the Lake Carriers' Association, will at once begin the preparation of a plan of campaign in Congress on late improvements and aids to navigation, which will include lights, buoys and fog signals, besides the raft-towing abuses, and the Chicago drainage canal.

The schooner Southwest, ore-laden at the Ohio Central docks at Toledo, began to leak and took in water at the rate of a foot an hour. It was found that the leak was near the fore foot, and a canvas jacket was put over the hole until the vessel can be put in the dry dock.

Isadore Roberts, a workman, has commenced suit against the Jenks Ship Building Co., of Port Huron, for $10,000. He claims that while working near the steam barge Linden he was struck on the back by a heavy timber and will be unable to do any manual labor for the remainder of his life.

Secretary H. C. Barter denies that the 'Longshoremen's International Association has set about raising a "defense" fund to fight the Lake Carriers' Association. He says the two are on good terms, and no fighting is called for.

HARBOR IMPROVEMENTS.

REPORTS AND RECOMMENDATIONS OF THE ENGINEERS.

The season has once more swung around when the engineers in charge of river and harbor improvement file with the chief of engineers, U. S. A., their reports of work accomplished during the fiscal year of the government, which include a statement of the actual status of the work on June 30.

The most important of the lake reports is, of course, that of Gen. O. M. Poe, the work of which he has charge of being of immediate interest to the owner of every large vessel which passes up or down the lakes. Gen. Poe's report, of course, dwells chiefly this year upon the deep channel project, commonly known as the 20-foot waterway. The contracts for excavating the eight sections into which the work has been divided have been carried on during the year at a cost of $802,077, the total expenditure on this improvement being $1,188,-196. These contracts expire in December, 1895, and Gen. Poe says that it is not likely that the government will be called upon to give much, if any, extension of time to the contractors.

Originally the channel at Limekiln Crossing, Detroit River, could not be depended upon for more than 13 feet of water, the ordinary depth being much affected by the direction of the wind. The estimated cost of a 400-foot channel is $1,374,500. The amount expended to June was $702,122, and the result has been a channel 440 feet in width. On examination large bowlders were found from Ballard's reef to the head of Limekiln Crossing, making the channel navigable for vessels drawing not over 16½ feet of water. All these bowlders will have to be removed to the same grade as the Limekiln Crossing work. The estimate for obtaining a 20-foot channel is $180,000, of which $28,742 is available from appropriations under the contract with Carkin, Stickney & Cram, for removing bowlders near Ballards' reef; 18 feet of water has been obtained over a distance of 3,200 feet from the head of this reef.

At St. Clair Flats Canal the report shows that the preliminary estimate amounted to 950,000 cubic yards of clay and sand. A depth of 20 feet was required, and the contract price was 16.5 cents per cubic yard. The contractor, James Rooney, commenced work April 22, 1893. The contract was completed and closed December 7, 1894; 648,630.5 cubic yards having been removed for which $107,024 was paid.

HAY LAKE AND THE SAULT CANAL.

A hydrographic survey of Hay Lake was completed in February. A shoal was found where the improved channel enters the deep water in Hay Lake, prior to March, 1895, 4,667,315 cubic yards of material had been removed. In addition thereto, 64,424 cubic yards of clay were excavated from Sugar Island Rapids, for making coffer dams for the 800-foot lock. Contracts were entered into for removing a shoal at the upper end of Hay Lake, and for cleaning up shoals near Nine Mile Point; 5,038 yards have been removed from the first and 345 yards from the latter, nearly completing that portion of the work. The entire commerce of St. Mary's River has used the channel, excepting a few rafts. The rapid increase of the number of boats adds largely to the danger of accidents during night navigation of the Middle Neebish, and makes the project of widening the channel through the rock at that point to 400 feet of great importance. The amount expended during the year was $163,621 and the balance on hand is $305,519.

In the operation and care of St. Mary's Falls Canal, $50,968 was spent during the fiscal year. The canal was open to navigation 226 days, during the fiscal year closing December 5, 1894, and opening April 25, 1893. The expenditure for the year was $610,090, a total to date of $2,872,073.

The estimated cost of the enlargement of the canal system is $4,738,865, and up to June, 1890, a total of $1,250,000 had been appropriated, and in 1890 an additional $900,000 was appropriated for continuing the work. The coffer dam remained intact without repairs during the year. The work done consisted of laying masonry in lock walls, constructing lock floors, excavating and building foundations for piers, placing and testing the turbine power plant, and constructing a clay dam.

REPORT OF COL. JARED A. SMITH.

The report of Lieut. Col. Jared A. Smith, in charge of the corps of engineers for river and harbor and improvement on Lake Erie, west of Erie, Pa., makes recommendation for improvements at 12 ports.

MONROE.—The reports shows that the original improvement, deepening the harbor at Monroe, Mich., up to 1889, was $213,515. Since that time the cost of maintenance and repairs has aggregated $21,519 with a small sum yet available to finish necessary work.

TOLEDO.—For the improvement of the harbor at Toledo, the engineer shows considerable progress on the work of deepening the channel with a balance of $34,-000, available July 1, to continue the work. Statistics are collated showing the increased business of the harbor.

PORT CLINTON.—Up to June 30, 1894, $75,315 had been expended in work on the harbor at Port Clinton, O., leaving a balance of $6,300 available. It is believed the mouth of the Portage River can be straightened and a channel dredged, thus completing the improvement for $21,000.

SANDUSKY.—The report shows that the project for a straight channel into the harbor at Sandusky, O., is almost completed, thus giving entrance to vessels drawing 18 feet. Range lights will mark the limits of this channel. Balance available to continue the work amounts to $16,000, while $225,000 will be needed to finish it.

HURON.—For the improvement of Huron harbor a balance of $3,500 is yet available and recommendations are being made for a rapid prosecution of the work, completing harbor piers and deepening the harbor channel.

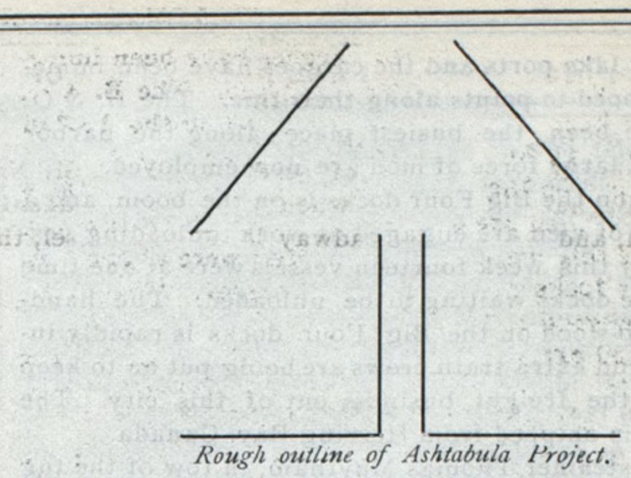
VERMILLION.—An appropriation sufficient to cover repairs to piers at Vermillion River and harbor is urged. Since the completion of these piers in 1879, a total of $17,000 has been expended for such work, but no work was done during the last fiscal year. To complete existing projects $4,000 is needed.

LORAIN.—At Lorain the work consisted of extending the west pier 72 feet, the extension consisting of a single crib constructed by John Stang, of Lorain. It was launched in two sections, afterward joined together. In May Col. Smith was notified of a bar 75 feet wide and 1,500 feet long in the channel between the piers. A dredge was set at work immediately and took out 9,405 yards of material, leaving the channel in good condition, with 18 feet of water.

CLEVELAND —In regard to Cleveland the report states that $4,792 was expended in maintaining old work during the year. The recommendations contained in last year's report, urging the importance of rebuilding the old breakwater, are repeated, as some portions are too old to withstand the force of storms. A superstructure of concrete masonry is recommended as the cheapest that can be made, of a reasonable permanent character. Col. Smith refers to the work of opening a cut 200 feet wide, in the west arm of the breakwater, 1,350 feet shoreward from the northeast angle. The opening is being done by hired labor. All the superstructure has been removed, and strong bulkheads have been built in the old work at each end of the opening. In this connection it may be said that the rather tedious work of raising with the aid of a diver the large bowlders which are piled up against the structure on the harbor side, and of getting them out of the way, will soon be completed, and Col. Smith intends thereafter to put a few dynamite cartridges in the crib work to be blown out, which will loosen up the material so as to admit of ready materials. The cost of this improvement is estimated at $5,000, from which should be deducted the value of the stone ballast, which is worth $5 per cord, and which can be used elsewhere. The value of this stone is about $1,300. Five thousand dollars is reserved as an emergency dredging fund for the next two years.

FAIRPORT.—An examination of the piers at Fairport in October, 1894, when the stage of water was very low, disclosed that a section of the west pier, nearly 138 feet long, and originally 28 feet in width, was in such bad condition above and below water as to make entire removal necessary. The piers were originally placed on the natural bottom, and dipped inward as the result of deepening the channels. The work of repairing was done by J. B. Donnelly, of Buffalo, for $10,921; it began April 15, and was completed June 11. The entire length was replaced by a single crib, the grillage being built and launched in three sections, and afterwards joined together. It stands in a trench excavated to 20 feet below the mean water level. The sand bottom rises several feet above the crib bottom on the west side. On the east side, projecting timbers at the base form an apron which effectually prevents any underminining of the structure by the waves. The structure rises six feet above the water level.

ASHTABULA HARBOR.—Probably the most important feature of Col. Smith's report is his recommendation in the matter of the harbor of refuge, at Ashtabula, a part of the last appropriation being especially devoted to a survey with that end in view. Col. Smith describes at length the survey and soundings of Assistant Engineer Blunt. Twenty-two lines of soundings were taken, each more than a mile in length. Out of 45 places where soundings were taken with a view of ascertaining the nature of the bottom, bare rock was found in 38 localities. Elsewhere the sediment on top of the rock ranged from a few inches to two feet in depth. This effectually demonstrated the futility of making an outer harbor of refuge, as no anchorage was available. Col. Smith called attention to the fact that there are very few lone sailing vessels on the lakes, and these can readily be turned into Ashtabula's inner harbor by tugs. He refers to the project to extend the west pier 480 and the east pier 600 feet, as one means of affording a safer entrance in stormy weather. He points out that the piers and the channel between are exactly on the meridian, whereas the heavy seas almost invariably come from the northeast or northwest, and suggests that in lieu of the harbor of refuge proposed, which would be of small value in proportion to the expense of construction, the entrance in rough weather would be greatly aided by the construction of two breakwaters running at angles of 45° to the channel, and at right angles to each other, each breakwater to be 1,500 feet long, with an opening between them of 400 feet, in line with the channel between the piers. This would effectually



Rough outline of Ashtabula Project.

break the northeast and northwest seas. The cost of these breakwaters is estimated at $465,000, but it is noted that this expenditure would reduce by $114,400 the expense of pier extension, which had been previously estimated at $225,000. The rock dredging in the channel between the piers continues, and the contract for this work was taken at prices so reasonable that the appropriation for this work will be sufficient to dredge the river there to the proper depth for the entire distance between the piers.

CONNEAUT.—The end of the old pier at Conneaut had been badly damaged by the seas for 20 feet. This was braced and connected with the new pier by means of a triangular crib with its base 12 feet long against the old work and its perpendicular 20 feet long against this new work, and filled with stone and decked over. This device works admirably in throwing off the seas. The work of pier extension was not done by contract, but Eustus Gilmore, of Lorain, was appointed to superintend the work, which began April 8. At June 30, there had been framed 200,000 feet of hemlock timber and 10,000 feet of pine timber in three cribs, each 100 feet long and ready to sink in place. This last work was delayed June 29 by a storm, but much of it has since been completed. The outward crib was put in first and served as a protection to those inside. Col. Smith refers to the extensive dredging and wharf improvement that has been done by the Shenango Railroad, and to the phenomenal development of Conneaut's commerce.

MAJOR RUFFNER'S REPORT.

BUFFALO —In his annual report to the chief of engineers, Maj. E. H. Ruffner, in charge of the river and harbor improvements in the Buffalo district, after a description of the work accomplished in Buffalo harbor under the approved project, says that the south pier needs repairs in three places where it has settled. The breakwater has attained its full length of 7,600 feet and shows no sign of wear in the concrete portion, though there remain a few small holes to be filled up. Minor repairs will maintain the timber portion in good order for years. The wrecked portion of the shore arm remains unchanged and the needed repairs must wait the report of the engineering board convened to device a plan for the replacement of the bad foundation to the south breakwater. Only $9,779 of the appropriation was spent during the year and there is a balance of $134,287 available for continuing the work.

ERIE.—Of Erie harbor, Maj. Ruffner says the south breakwater is old and decayed and requires repairs after every severe storm. The timbers of the south pier are decaying and it will require a new superstructure and refilling with stone and a new deck. A new superstructure will also be needed over the north pier in the older portion. The catch sand jetty is not worth repairing. The channel is gradually shoaling about the harbor entrance and both channels require repeated dredging. To prevent breaches across the neck it is proposed to construct a wall 500 feet long at the most exposed point, rising four to five feet above the water. As the bar formation above the north pier continues to grow, it is suggested that this pier should be extended. The projected extension of the south pier is not now expedient. Only $3,675 of the appropriation was expended last year, leaving $51,609 available.

LAKE MICHIGAN HARBORS.—Capt. Carl F. Palfrey, in his report to chief engineers, says, speaking of the work in progress, at Milwaukee, that the object is to obtain an 18-foot channel into the Milwaukee River, which is the inner harbor, but as soon as the deep channel is secured the Milwaukee channel will have to be deepened to correspond. At Green Bay, the 16-foot channel, 100 feet wide, will be completed by the end of the season. In the Sturgeon Bay and Lake Michigan Canal a regular depth of 13 feet of water has been obtained. On the project to secure 14 feet of water at Kewaunee harbor 13 feet has been obtained. At Manitowoc, Wis., where the object was to obtain 18 feet of water at the entrance, 16 feet has been secured. The same is the case at Sheboygan. Work on the breakwater for the harbor of refuge at Milwaukee Bay has been continued and $40,000 expended during the year. At Racine, 13½ feet of water has been obtained. Sixteen feet is desired.

The report submitted by Maj. W. A. Jones on the improvement of the St. Croix River in Wisconsin and Minnesota, shows that up to the fiscal year June 30, 1894, about $108,500 has been expended on the stream. During the past year the work was confined to dredging in the channel over the Hudson bar, which has facilitated the passage of raft boats with their large tows. The report of Maj. Jones on the Minnessota River shows that $126,926 have been expended on the stream up to June 30, 1894.

STOPPING, STEERING AND RESISTANCE OF FLOATING VESSELS.

BY JOSEPH R. OLDHAM, N. A. AND M. E.

Referring to the steering of screw steamers, Sir Nathaniel Barnaby states that when a screw is suddenly reversed, and before the headway is off the vessel, the action of the rudder is not to be depended upon. The following is an extract from the report of the committee appointed by the British Association to investigate the effect of propellers on the steering of vessels.

The committee endeavored to ascertain how far the reversing of the screw in order to stop a ship did, or did not, interfere with the action of the rudder during the interval of stopping. The report states:

It is found an invariable rule that during the interval in which a ship is stopping herself by the reversal of her screw, the rudder produces none of its usual effect to turn the ship, but that under these circumstances the effect of the rudder, such as it is, is to turn the ship in an opposite direction from that in which she would turn if the screw were going ahead. The magnitude of this reverse effect is always feeble and is different for different ships, and even for the same ship under different conditions of loading.

It also appears that, owing to the feeble influence of the rudder over the ship during the interval in which she is stopping, she is then at the mercy of any other influences that may act upon her. Thus, the wind, which always exerts an influence to turn the stem or forward end of the ship into the wind, but which influence is usually well under control of the rudder, may when the screw is reversed, become paramount, and cause the ship to turn in a direction the very opposite of that which is desired.

Also the reversed screw will exercise an influence which increases as the ship's way is diminished, to turn the ship to starboard or port, according as it is right or left handed, this being particularly the case when the ship is in light draught. These several influences, the reversed effect of the rudder, the effect of the wind, and the action of the screw, will determine the course the ship takes during the interval of stopping. They may balance, in which case the ship will go straight on, or any one of the three may predominate and determine the course of the ship.

The pressure on the screw blade which is moving in the same direction as that in which the stern of the vessel is turning is increased, while on the blade moving in the opposite direction the pressure is reduced, that is to say, if the screw is right-handed and the vessel is under port helm, the stern, consequently, traveling to port, the resistance of the lower blade which is moving towards the port side will be increased, and the resistance of the upper blade, which will be moving towards the starboard side, will be diminished, because the one is meeting the water, and the other is receding from it. The change of pressure will be proportional to the square of the angular velocity of the stern. The irregular pressure causes the vibration frequently noticed when a screw vessel is rapidly turning.

I think the opinion, or I may say the conviction, is not uncommon amongst those connected with the working of high speed, fine lined steamers, that the great power of their engines will generally enable them to arrest the forward motion of the hull in less time and space than is required by comparatively low speed vessels, and reasoning thus it is sometimes assumed that their inability for rapid maneuvering through high efficiency of the rudder power alone is not of so great importance.

This assumption, however, is not borne out by some careful experiments made under the directions of Prof. Osborne Reynolds, to discover the best rules for the guidance of ship captains in endeavoring to avoid collisions. From this it appears that the distance required by a screw steamer to bring herself to rest from full speed by the reversal of her screw, is independent, or nearly so, of the power of her engines, but depends upon the size and build of the ship, and generally lies between four and six times the ship's length.

As to the effect of shallow water on the steering of vessels, Mr. White states that it is a matter of common experience that ships which are perfectly under control in deep water, steer wildly and require careful watching when they are navigating in very shallow waters, and have their keels only a few feet from the bottom. This is well understood by lake shipmasters and others, and as our most intricate navigation is in shallow waters, it would seem to require no further argument to show that high efficiency in steering by a rudder is of the utmost importance on these rivers and lakes.

As regards the form or contour of rudders, it may assist in arriving at sound conclusions on this head if I touch briefly on the resistance offered by water to the motion of floating bodies. The effect of hydrostatic pressure on floating bodies appears to be very imperfectly understood. For instance, with regard to surface friction of a ship moving through the water (and of course the rudder is part of a ship) some authorities maintain that a square foot of surface, say on the side of the keel of a deep ship, meets with no greater frictional resistance than an immersed square foot near the load water line, whilst others assert that the friction augments in the same ratio as the hydrostatic pressure.

Mr. White says: "If there be no surface disturbance, the resistance at any speed is independent of the depth, and this is equally true of the resistance to direct and oblique motion of a body through water." Col. Beaufoy ascertained the resistance of a plate moving normally to itself, when submerged to depths of three, six and nine feet below the surface, and found them practically identical at all the depths. On the other hand, Mr. Seaton maintains that the friction of the water per square foot of surface will depend on the pressure directly, so that the resistance from a square foot near the water line is very different from one twenty feet below it.

The success of torpedo boats depends almost wholly on their lightness of both hull and machinery, enabling them to do with so small a displacement that they literally skim the water, and the pressure per square foot of wetted skin is consequently very small. Unless small boats are made to float at a very light draft they cannot be driven at high speeds, and all experiments with fast river steamers on the Clyde and elsewhere, have shown this. From this and other experiments it would seem that the smaller the surface of the rudder at and near the keel the better. Some persons have confused hydrostatical pressure with the dynamical conditions incidental to motion. The hydrostatical pressure sustained by the sides of the rudder, if held at an angle, balance one another and are quite distinct from the reaction due to change of momentum in streams having motion relatively to the rudder. Without motion of a ship through the water or of the water past the rudder, it can have no steering power. The check put upon streams by the rudder must produce a reaction not merely upon the rudder itself, but upon the portion of the stern post or dead-wood above the propeller aperture. This additional pressure on the dead-wood will be delivered on the side towards which the rudder is put over it and must considerably assist the rudder in steering a steamer. When a rudder is placed at an angle with the keel line of a steamer and the streams of water impinge upon its surface, in consequence of the motion of the ship, or of the action of her propeller, the motion of these streams must be checked or diverted, and a change of momentum is produced which reacts upon the rudder and causes a normal pressure upon its surface and also upon the dead-wood of the screw aperture (except when the aperture is open at the top). The large aperture or vacant space before the rudder, in which the screw is working, must also divert and disturb the symmetry of the stream lines and cause eddies and broken water to impinge on the rudder, thus causing the steering of the ship to be irregular and comparatively slow, or as sailors say, it causes the ship to steer wildly. For regular and quick steering the smaller the screw aperture the better. The upper surface of the rudder is not more effective than the lower surface when the water flows uninterruptedly to the rudder over its total immersed depth, as in a sailing vessel, but in a screw steamer nearly the whole of the immersed surface of the rudder when the vessel is still, meets with broken water and irregular eddies when she is at sea, if the screw aperture be large and open for a considerable height above the top of the propeller blades, but when this aperture is reduced in breadth and closed in immediately above the screw propeller, the upper surface of the rudder then becomes much more efficient than the lower surface, because the stream lines of the water in motion flow symmetrically on until they come into actual impact with the rudder, and in consequence the impulse of the water acts directly and uniformly on either side over the upper surface of the rudder, according to the direction in which it is turned; hence, it appears that the upper surface is more effective than the lower surface, which is directly affected by the screw propeller.

BALANCED RUDDERS.

By a balanced rudder I mean a rudder having a portion of its surface (usually about one-third) before the axis about which it rotates. Such rudders are not uncommon on these lakes, indeed they may be said to be the common type of rudder on the inland seas; but notwithstanding the fact that such rudders are more efficient, as I shall presently demonstrate, they have occasionally and even recently been superceded by the common tramp type of rudder and by a modification of that rudder. Mr. White tells us that the balanced type of rudder has been long known; Earl Stanhope proposed its adoption in 1790, and Capt. Shuldham fitted one to a ship about seventy years ago. It was also fitted in the Great Britain in 1845 and it has been frequently fitted to government ships during the last thirty years. Various rules have been used for determining the areas of rudders for steamers. For lake vessels having lengths from seven to eight times the beam, the immersed surface of the rudder should equal to about one-fiftieth of the immersed middle line longitudinal section of the ship, the extreme breadth being not greater than one sixth of the breadth of the beam plus 1 foot. This is a slight modification of Mr. Scott Russell's rule. Mr. Macrow says: Four features chiefly affect the readiness of a ship to answer helm: 1, Time occupied in putting helm hard over; 2, rudder pressure corresponding to that position; 3, moment of inertia of ship about vertical axis passing through the center of gravity; 4, moment of resistance to rotation. The diameter of circle turned in has been found to vary between six and eight times the length of the ship with ordinary rudders, and from four to five times with balanced rudders, using manual power only. With steam power the circle turned in with ordinary rudders about four times the length of the ship, and with balanced rudders less than three times the length.

Rudder areas may be proportioned as follows: A^1 and A^2 = middle line planes of two similar ships, a^1 and a^2 the rudder areas, 1^1 and 1^2 the lengths; then

$$\frac{a^1}{a^2} = \frac{A^1}{A^2} = \left\{\frac{1^1}{1^2}\right\}^2$$

As an example, suppose a lake steamer 300 feet long and 16 feet mean draft of water has a rudder surface of 100 square feet, the middle line plane being 4,800 square feet. Then for a steamer 400 by 20 feet draft, having a middle line plane equal to 8,000 square feet, the rudder area would be as follows:

$$\frac{A}{100} = \frac{8{,}000}{4{,}800} = \left\{\frac{400}{300}\right\}^2$$

by which we see that the area for the large steamer would be 296.3 square feet. This simple and accurate formula for ocean steamers does not conform to our lake practice, indeed it is just as far in excess of the surface provided by our best shipbuilders as the diameter of rudder heads corresponding to the hand book formula, for high speed ocean steamers, is in excess of the diameter found to be sufficient for high power lake steamers.

Let me now just say a few words about the turning of steamships and the efficiency of balanced rudders.

Prof. Rankine, when investigating the point of the instantaneous axis about which a ship should begin to turn when the rudder was first put over, regarded the first action of the rudder as an impulse, and experienced seamen declare that when a steamer has headway and the helm is put over, the head turns comparatively slowly, while the stern swerves suddenly to the right or the left.

As an example of the superiority of balanced rudders, consider the trials of the Minotaur and Bellerophen. The Minotaur, with eighteen men at the wheels and sixty at the relieving tackles, turned a circle in 7⅔ minutes, 1½ minutes being occupied in putting the helm over to the very moderate angle of 23 degrees. The Bellerophen had a balanced rudder with 25 per cent. greater area than that of the Minotaur, but it was put over at an angle of 37 degrees, and in about twenty seconds by eight men when the ship was steaming at about the same speed the Minotaur had attained.

By means of either hydraulic or steam power the largest rudders can be worked and put hard over in a few seconds by one man or by the master himself when ships are moving at the highest speed.

It still remains true, however, that the adoption of the balanced rudders minimizes the work to be done in steering, and it has been proved repeatedly by experimental trials, that large, high-speed ships fitted with balanced rudders, can be safely steered by hand, which could not be so steered with an ordinary rudder.

SAULT TRAFFIC FOR JUNE.

Following is the official statement of the traffic through the St. Mary's Falls canal for the month of June, 1895, as compared with the corresponding period for the season of 1894:

EAST BOUND.

ITEM.	DESIGNATION.	June '94.	June '95.
Copper	Net tons	12,754	17,288
Corn	Bushels	469,489	.....
Building stone	Net tons	3,770	5,868
Flour	Barrels	1,142,965	1,216,472
Iron ore	Net tons	1,217,365	1,489,573
Iron, pig	Net tons	2,070	2,473
Lumber	M. ft. b. m.	123,968	135,286
Silver ore	Net tons	.....	.....
Wheat	Bushels	2,934,890	1,584,571
Unclassified freig't	Net tons	21,064	30,287
Passengers	Number	1,899	2,480

WEST BOUND.

ITEM.	DESIGNATION.	June '94.	June 95.
Coal, anthracite	Net tons	108,220	33,166
" bituminous	Net tons	12,300	185,719
Flour	Barrels	.....	.....
Grain	Bushels	.....	8,000
Manufactured iron	Net tons	4,391	9,311
Salt	Barrels	43,107	30,888
Unclassified freig't	Net tons	32,204	38,365
Passengers	Number	1,828	2,134

East bound freight, net tons	1,937,526
West bound freight, net tons	271,520
Total	2,209,046

THE MARINE RECORD

ESTABLISHED 1878.

PUBLISHED EVERY THURSDAY, AT 144 SUPERIOR ST., (LEADER BUILDING), CLEVELAND, O.

IRVING B. SMITH, CAPT. JOHN SWAINSON, } . . . PROPRIETORS

BRANCH OFFICE:

CHICAGO, ILL., ... 238 Lake Street.

THOMAS WILLIAMS, Associate Editor.

SUBSCRIPTION.

One copy, one year, postage paid, . . . $2 00
One copy, one year, to foreign countries, . . $3 00
Invariably in advance.

ADVERTISING.

Rates given on application.

Entered at Cleveland Post Office as Second-class Mail Matter.

CLEVELAND, O., JULY 18, 1895.

PUBLISHERS' NOTICE.

We desire to state that Captain John Swainson, editor of THE MARINE RECORD, has retired from the editorial management, and will shortly leave for Europe, accompanied by his family, for an extended visit in the British Isles.

Captain Swainson's thorough education in all matters relating to navigation, added to a wide range of experience on both salt and fresh water, have been the means of making THE MARINE RECORD an authority on the various questions of moment that have related to lake navigation during past years, and he leaves THE RECORD with the sincerest regret of the management.

Captain Swainson will be succeeded in the editorial department of THE RECORD by Mr. William L. McCormick, who is already well known to almost all the lake marine, by reason of his long connection with the marine department of daily newspaper work, and therefore needs no further introduction.

SMITH & SWAINSON.

ASHTABULA'S HARBOR OF REFUGE.

The recommeudations of Col. Jared A. Smith, in regard to the proposed harbor of refuge, for which a special survey was ordered by Congress, can hardly meet with less than unanimous approval. Cleveland's outer harbor affords a shining demonstration of the practical value of the artificial harbor of refuge on Lake Erie in a serious gale, and the character of the bottom off Ashtabula seems to render the proposition of a harbor of refuge an absurdity.

Col. Smith's plan, however, provides for the practical needs of vessels at Ashtabula, and the scheme will doubtless prove as highly satisfactory as the expensive arrangement the citizens of that port had originally in mind. It is a contrivance which guarantees a safe entrance in all weather to the inner harbor, where distressed vessels could usually find room for shelter. The two breakwaters would so protect the entrance to the river that vessels would need to lose no more time reaching other ports in storms because of inability to enter Ashtabula Harbor. Col. Smith's recommendations show a desire to work for the harbor's best interests, and to expend the government money in the most economical manner to produce the best results.

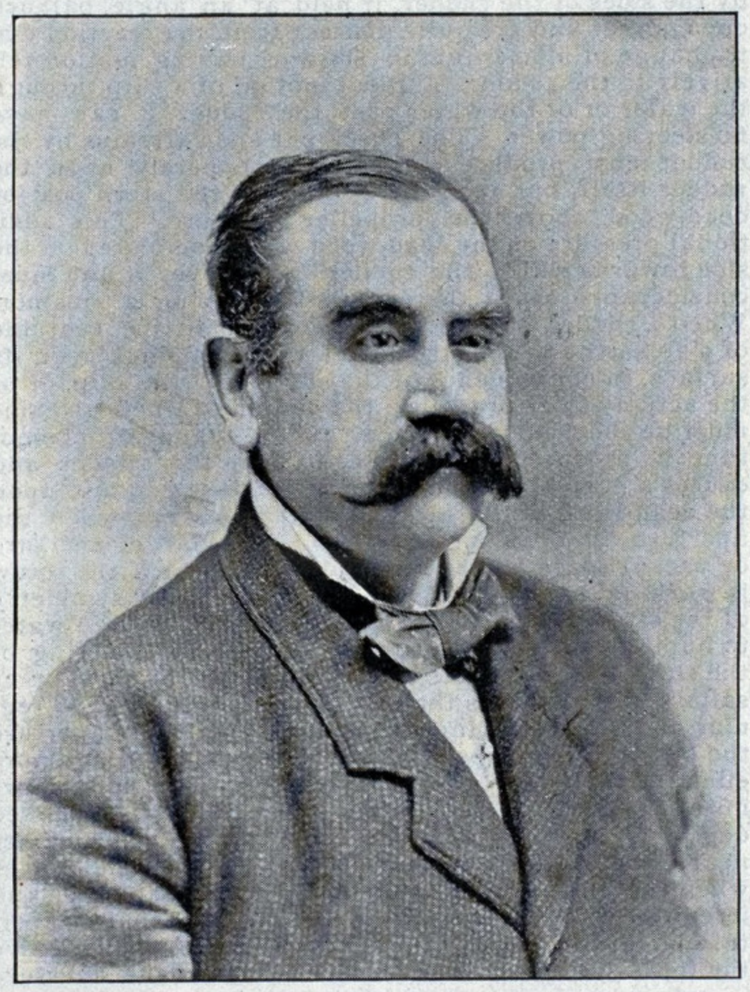
THE trips on the lakes, during the past week, of Secretary of War Lamont and Chief of Engineers Creighill, ought to mean a great deal for these inland waters. The requests for appropriations have always been urged in connection with the plea that "seeing is believing," and with invitations to executive and legislative officers to see for themselves the extent of lake commerce, the Lake Carriers well knowing that the sight of the immense heaps of ore, the magnificent fleets, and the extensive docks would make a more lasting impression than weeks of argumentative persuasion.

SECRETARY CHARLES H. KEEP will come up from Buffalo to-day (Thursday) and with General Coursel Harvey D. Goulder, and Capt. George P. McKay and other members of the finance and legislative committees, will make a draft of a bill to regulate raft-towing in the connecting waters of the Great Lakes. The bill, as drawn up, will doubtless be the same that was approved by the board of army engineers which had been appointed to investigate the matter a year ago, and which was slyly amended by a trick of the lumber men in such a way as to entirely thwart the purpose of its proposed enactment. When the Lake Carriers learned of the trick, they succeeded in preventing its passage in the amended form, but could secure no further legislation, as the time of adjournment was so near. The original bill was all right, and if it is once more presented for enactment, all that will be necessary on the part of the legislative committee will be a careful watch to see it is not again tampered with.

OBITUARY.

CAPT. JAMES BECKWITH.

Capt. James L. Beckwith, one of the oldest lake navigators. died at Chicago last Thursday night. He was born in Utica, N. Y., May, 1824, and at the age of 14 entered the seafaring life. He crossed the Atlantic on



CAPT. JAMES L. BECKWITH.

the Superon. From that time onward he became one of the most skilled salt water sailors. Later he returned to Buffalo and began his career as a lake mariner. He was among the noted captains of the Peoples line. During the early days of navigation he commanded the Young America and Pittsburg. He built and sailed the brig Maria, and later was master of the Badger State. After long years of service on the lakes he came to Chicago and engaged in lake underwriting as manager of the Albany Insurance Co., which position he held until the fire of 1871. Then he went to Cincinnati to accept the marine management of the Andes, Amazon, and Triumph insurance companies.

In 1874 Capt. Beckwith returned to Chicago, and formed a partnership with Palmer & Atkins, vessel and insurance agents, remaining with them two years, after which the partnership was dissolved. In 1876 he secured the agency of the Commercial line, and formed a partnership with Capt. A. R. Atkins, which continued until the death of the latter, eight or ten years later. Then Capt. Beckwith made P. H. Fleming his partner, and this association continued until 1889 when Capt. Beckwith retired from business. Fifty years ago he married Miss Cinderella Noyes, of Detroit. To them were born two children, Frances W., who died in 1875, and James A., a business man of Chicago.

The immediate cause of Capt. Beckwith's death was cancer of the jaw, from which he has been suffering acutely for more than two years. He was always highly respected and esteemed for his sterling business qualities and integrity.

The funeral services were held Sunday afternoon at the Park Avenue Methodist church, and were attended by a large concourse of Capt. Beckwith's friends in marine and other circles, and the casket was fairly hidden with floral offerings. The remains were escorted from the family house No. 250 Park avenue, to the church, and from the church to Rose Hill Cemetery by the members of Kilwinning Lodge, No. 311, of Masons, of which the deceased was a member, the pall bearers being Messrs. James L. Higgie, S. H. Donaldson, William Sayer, John McCauley, J. J. Hensel and J. Phillips. At the cemetery the burial ritual of the lodge was conducted by Past Master Hugh McMillan, who delivered a glowing eulogy at the grave of his old friend and brother.

CAPT. JOHN SAUNDERS.

Capt. John Saunders, a vessel owner and capitalist of Kingston, Ont., was drowned while crossing the St. Lawrence River at four o'clock Tuesday morning. He was in charge of the dredging plant of the Canadian Government, which came to Prescott Monday. The body was not recovered.

THE FREIGHT SITUATION.

Owing to the advance of 1½c in dock charges for unloading ore, vessels have been trying to get the Ashland rate to 90c. That they have not yet succeeded in this is due solely to the strike of the iron miner , which has cut down shipments from Escanaba and has placed more boats in the Lake Superior trade. Vesselmen who are not tied up on cheap contracts, are not disposed to grumble, as they can see very bright times ahead, when not only 90c, but considerably more will be paid from the head of the lakes. Marquette and Escanaba rates remain at 75c and 55c.

The coal movement is only beginning to be active and no changes in rates are quoted. The grain movement from Chicago is trifling, but Duluth holds out hopes of big shipments in August and September, both in wheat and lumber. Duluth grain men are trying to secure capacity for September shipment at 2¾c, with poor success.

ADVANCE IN WAGES AND DOCK CHARGES.

The dock managers controlling nearly all the ore receiving docks at Lake Erie ports met Saturday and advanced the wages of the ore handlers 10 per cent. While no formal demand for an advance was made the men have been dissatisfied for some time.

The wages of the ore handlers were reduced a year ago last spring.

The dock managers also restored their charges for unloading ore from vessels and the rate which has been for the past two years 13½ cents a ton, has been marked up to 15 cents a ton. The dock managers say that it was necessary to make the advance in order to pay the men on the docks better wages.

SOME SPEED RECORDS.

The steamer Harvey H. Brown, owned by the Northwestern Transportation Co., bound up light, arrived at Ashland Monday, having made the run from the Soo, 360 miles in 21 hours, or 17⅛ miles an hour. This will go on record as the fastest time ever made by a freighter on Lake Superior.

The steamer S. S. Curry arrived at the Northwestern ore dock Ashland at 2 o'clock last Saturday afternoon, having made the round trip from Ashland to Cleveland and unloading a cargo of ore in six days and one hour.

NOTICE TO MARINERS.

BUOY REPLACED.—Notice is given by Commander J. H. Dayton, U. S. N., inspector ninth light-house district, that the red spar buoy marking north entrance to Calumet River, off South Chicago, Ill., reported adrift July 2d, 1895, has been replaced.

WHERE IS CAPT. SHINGLER?

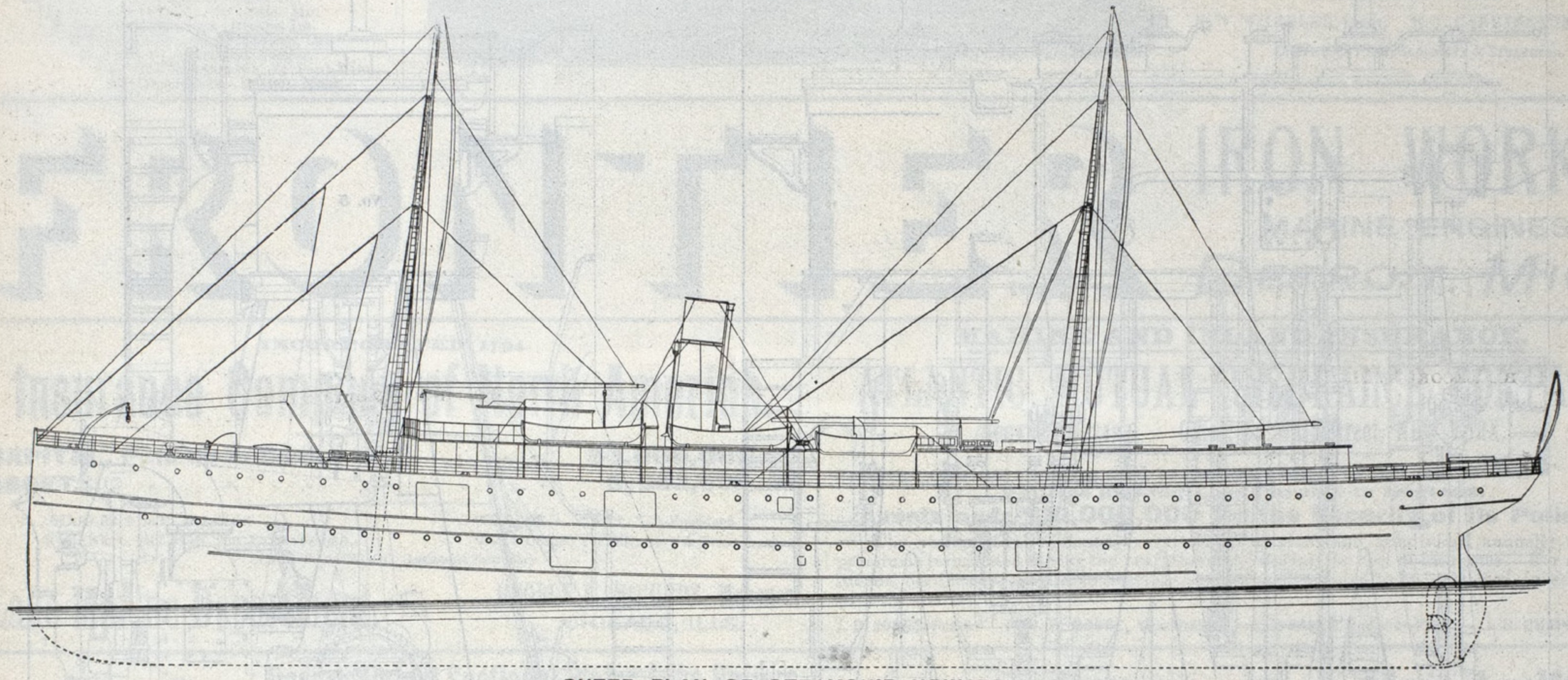
George Shingler, better known as Capt. Bob Shingler is wanted in Port Huron, his sister having died three weeks ago. Wire your address to Thos. B. Sovereign at once. Lake papers please copy.

THE NEW STEAMSHIP HOWARD.

(ILLUSTRATED)

The Harlan & Hollingsworth Co., of Wilmington, Del., have built a single screw steamer for the Merchants' and Miners' Transportation Co., intended to run between Baltimore and Boston. She is a duplicate of the Fairfax, built by the same firm in 1891 for this line. Her dimensions are: Length on water line, 270 feet; length over all, 293.5; beam, molded, 42 feet; depth to third deck, 26 feet; depth to fourth deck, 34 feet. She will have accommodations for 110 first-class and a few second-class passengers, and will be handsomely fitted and furnished. The fourth deck is a light hurricane deck, but has steel beams. On it are three house erections containing the social hall, rooms for first-class passengers, smoking rooms, ladies' toilet rooms, and rooms for the engineers. On top of the forward house is the pilot house and captain's room, all of which are finished in hard wood. The main saloon, which is finished in mahogany, is located aft of the engine space on the third deck, with a large stairway leading to the social hall above. On this deck are also located the galley and rooms for the cooks, oilers, and second-class passengers, with the crew in the extreme forward end.

She is rigged as a schooner, having two pole masts with wire standing rigging, and is provided with the usual steam capstan, steam steering gear and electric light. The motive power consists of one verticle triple expansion engine with cylinders 28, 45 and 72 inches diameter by 48 inches stroke, operating three cranks. The air, feed and bilge pumps are worked from the low pressure crosshead; the circulating pump is one of the centifugal type and is run by an independent engine. The high and intermediate pressure cylinders are fitted with piston valves, and the low pressure with a slide valve, all worked by Stephenson link motion, and reversed by direct steam gear. The boilers are four in number, each with three corrugated furnaces, and built for working under natural draft at a pressure of 160 pounds per square inch. They are 13 feet 6 inches diameter and 11 feet 6 inches long, and contain 272 square feet of grate and 7,780 of heating surface. There is also an auxiliary boiler 7 feet diameter and 10 feet long, built also for a working pressure of 160 pounds per square inch. The vessel is intended for a speed of 15 knots at sea loaded.



SHEER PLAN OF STEAMSHIP HOWARD.

CAPACITY OF NEW TONNAGE.

According to the Great Lakes Register of Shipping supplement there are twelve screw steamers and two steel tow barges at present under construction in the lake shipyards, the aggregate capacity of which amounts to over 50,000 tons at 17 feet draft of water. When the new Soo lock is completed this new fleet will be able to transport 1,500,000 tons of ore from Lake Superior to Cleveland in an average season of navigation. The largest of the steel steamers is 432 feet long, 48 feet broad, and 28 feet deep Her deadweight ability at 20½ feet mean draft is 7,000 tons. The average tonnage of the ore steamers now building is 80 per cent. greater than that of the average ore steamer now in commission. Should the Chicago drainage canal cause the upper lake levels to be lowered as much as nine inches, the deadweight ability of the steel vessels now under construction would be reduced 200,000 tons during one season of navigation.

HOSPITALS FOR SEAMEN.

Contracts have been made by the Treasury Department for the care of seamen entitled to relief by the marine hospital service for the fiscal year ending June 30, 1896. At lake ports these contracts are as follows: Ashland, Wis, St. Joseph's Hospital; Cairo and Chicago, Ill., hospital patients to be cared for in the United States Marine hospitals; Detroit, Mich, United States Marine Hospital; Escanaba, Mich, Delta County Hospital: Green Bay, Wis., Montrose Hospital; La Crosse, Wis., St. Francis Hospital; Manistee, Mich., Mercy Hospital; Marquette, Mich, St. Mary's Hospital; Milwaukee, Wis., St. Mary's Hospital; Michigan City, Ind. seamen requiring hospital treatment must make application to the United States Marine Hospital at Chicago; Port Huron, Mich, hospital and home, patients requiring long continued treatment to be furnished transportation to the United States Marine Hospital at Detroit; Saginaw, Mich, St. Mary's Hospital; Superior, Wis., St. Mary's Hospital; Toledo, Toledo Hospital.

CIBOLA DESTROYED BY FIRE.

Shortly before 1 o'clock Monday morning the steamer Cibola, of the Niagara River Line, was discovered to be on fire at her Lewiston, N. Y., dock. The flames soon enveloped the steamer and communicated to the dock. The steamer broke away from her moorings and floated dowa the river, a mass of flames. She burned to the water's edge and her hull lies on a sandbar near the mouth of the river.

When the flames were discovered the crew and a few passengers were aboard and asleep. They were aroused and all succeeded in escaping with the exception of third engineer William Hammell, of Toronto, whose badly burned body was found later. The loss is about $200,000.

Mr. C. Schmitz, Berlin, has invented an apparatus for mining coal dust and air in proper proportions for feeding to a furnace to obtain perfect combustion, the coal dust being fed into a chamber where air is in motion, and where the impurities may be separated from it, while by means of a blowing engine the mixed coal dust and air, through a connection with a feed device, are fed to the fire, the velocity of the air maintaining in suspension just the quantity of coal dust which can be burned in the most advantageous manner under the conditions presented.

NEW YORK'S CANAL SYSTEM.

The comparative statement showing the total quantity in tons of each article cleared on the canals during the first week in July, 1894 and 1895 has been given out by Superintendent Aldridge.

For the first time during the season the report shows an actual increase in the tonnage cleared over the corresponding week of last year. The total tonnage in 1894 was 125,544, while that of the week just closed was 127,941, an increase of 2,397 tons

"There was a falling off in the quantity of wheat cleared," says the report, "the tonnage last year being 36,389, while this year it was only 3,614. There was also a falling off in general merchandise from 13,964 last year to 6,349 this year. There was a gain in anthracite coal, the figures being 17,605 in 1894 and 34,834 in 1895. There was an increase in building material, both as to timber and stone.

"The above statement is more than contradictory of the statement sent out by some unauthorized person to the effect that according to the returns received at the office of the superintendent of public works the total tonnage of the waterways thus far this season is only one-half what it was for the corresponding period last year. To be sure, there has been a falling off owing to the low rates offered by the railways, but instead of a falling off of half, the actual figures show that the falling off does not amount to more than 10 per cent. Last year up to July 7, the total tonnage amounted to 1,255,216, while this year up to the same date there has been carried 1,025,845 tons. These figures look still better when it is considered that last year the canals were opened about a week earlier than this year.

THE NEW HYDROGRAPHIC OFFICE CHARTS

Are meeting with great favor among vessel masters. One of the charts covers Lake Huron, Georgian Bay, and the Straits of Mackinaw, all on a single sheet. Another takes in all of Lake Superior on a single sheet. A chart of St. Joseph's channel with St. Mary's River from East Neebish to Mud Lake has just been issued. Charts of the other lakes will follow in a short time. The hydrographic office does not engage in the sale of any of its publications. All charts, sailing directions, etc., can be procured from THE MARINE RECORD, 144 Superior street, Cleveland, O.

NOTES.

A 5,000-ton steel steamship can be built, it is said, in Japan for £1 per ton less than in Great Britain.

Thus far this season the number of American vessels reported to be lost comprise 85 steam vessels and 276 sailing vessels and barges.

The "Umbria" burns 12 tons of coal per hour, and on every steamship of her size the journals and bearings of her machinery require 130 gallons of lubricating oil per day.

THE LONGSHOREMEN'S CONVENTION.

Wednesday and Thursday's sessions completed the work of the Longshoremen's Association. One of the most important steps taken was the extention of the scope of the organization, the name being changed from the Longshoremen's Association of the United States to the International Longshoremen's Association. The Longshoremen's Association of Canada with 5,000 members, will become a part of the International organization. An organizer is to be appointed who will visit the Atlantic and Pacific coasts in the interests of the order.

The convention, on the ground that "organized capital uses money to defeat labor," authorized the committee on constitution to prepare a plan for a defense fund.

President Keefe urged the members to go slow when raising their scale of prices. He suggested that a committee meet each season with a committee from the Lake Carriers' Association, and agree on a scale of wages.

It was "Resolved, that, when any vessels or barges load or unload with non-union men, then it shall be the duty of the local union to notify the locals where one vessel is destined to enforce a fine of 10 cents per thousand feet over and above the regular scale of wages."

The question of establishing an official journal, and the question of increasing the per capita tax were ordered submitted to a vote of the lodges.

Officers were chosen as follows: President, Charles Kelley, Ashland; second vice president, J. Schmidt, Sandusky; third vice president, P. R. Beach, Port Huron, secretary and treasurer, H. C. Barter, of Detroit; delegated to the convention of the Federation of Labor, Daniel Keefe, of Chicago. Escanaba was chosen as the best place of meeting.

Secretary Barter gives out the following; "A statement was sent out from Milwaukee during our meeting that we were raising money to fight the Lake Carriers' Association. Nothing could be more ridiculous. We did not raise a dollar nor attempt to. Even if we were inclined to fight the association, we recognize that their superior wealth would give them too great an advantage; but we are not. That association is composed of shrewd business men and they see that our organization is what they want. They get better service, so much better than that rendered by the low class of non-union roustabouts that it is money in their pockets to have our men, and those who have taken the pains to investigate the matter have found our men so much improved in the scale of humanity by organization that they become our friends and champions the moment they see the situation. There is no war betwcen the union and the Lake Carriers' Association, except where members of the association are ignorant of our organization, and such cases have become about extinct."

PORTAGE LAKE CANAL LANDS.

Secretary of the Interior Hoke Smith is now called upon to decide whether or not he will institute suit for the recovery of 130,000 acres of land in Michigan, out of which it is charged that the government was defrauded a number of years ago by the contractors who constructed the canal. If Secretary Smith does not order suit the opportunity will soon expire under the statute of limitations.

The first move made by Congress in the canal matter was the act of March 3, 1865, by which a grant of 200,000 acres was made to the state of Michigan for the purpose of aiding in the construction of the canal. It was required that the canal should be at least 100 feet wide, and not less than 13 feet deep. It was also directed that the lands should only be taken from tracts subject to private or cash entry, and should be the nearest vacant lands to the canal. The grant was conferred by the Michigan legislature upon the Portage Lake and Lake Superior Ship Canal, Railway and Iron Co., which attempted the construction of the canal. A year later the grant was increased to 400,000 acres of the same description of land. The company obtained repeated extensions of time, and when the so-called canal was "completed" it was entirely incapable of serving its intended purposes.

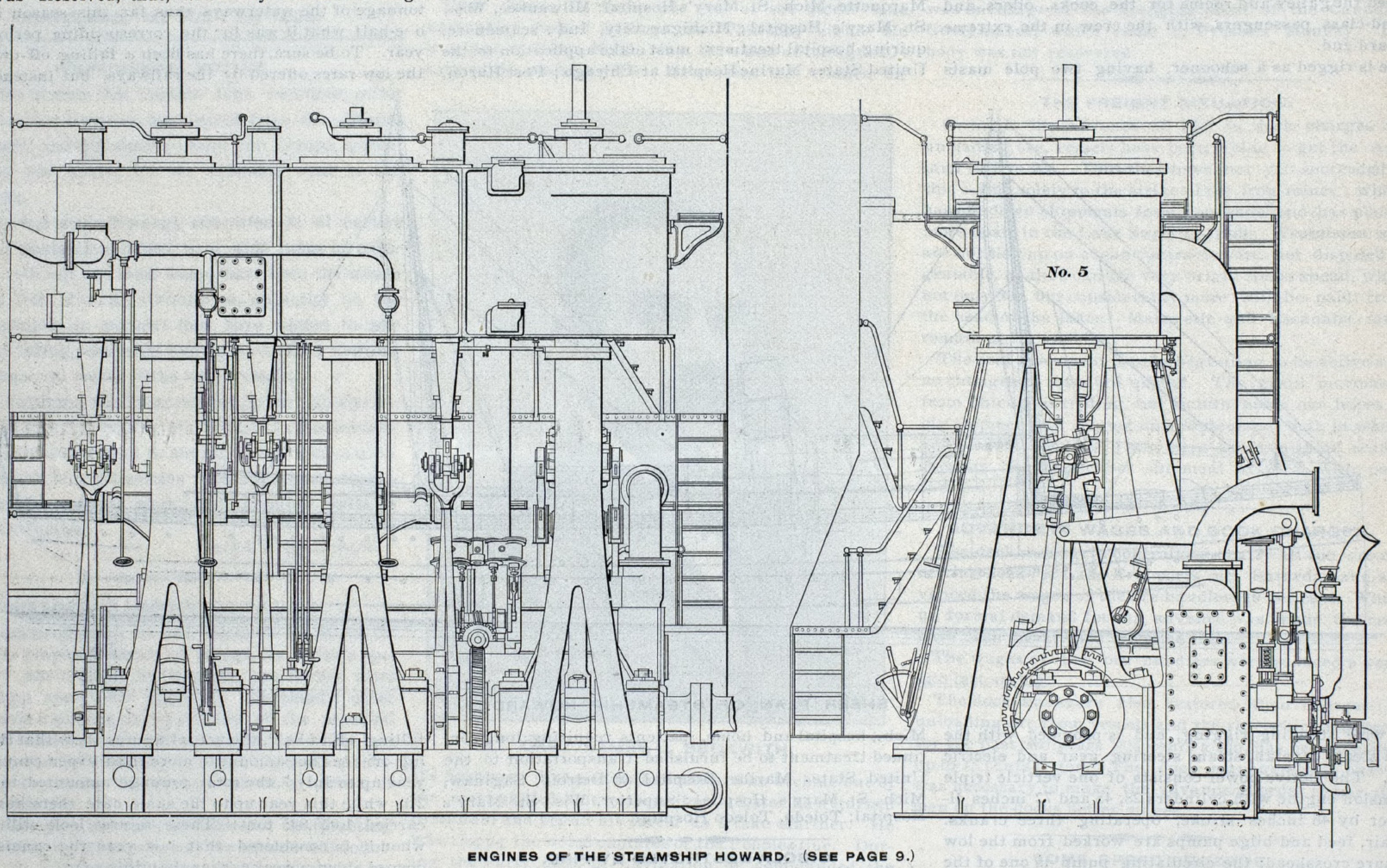
Congressional attention was soon called to the matter, and investigation developed that the company had secured nearly 300,000 acres of land excluded by the terms of the act, 68,000 of this being mineral lands.

An investigating committee of the 48th Congress said in its report:

"It is satisfactorily shown that no sufficient harbor or breakwater has ever been constructed, and that all that has ever been done by the company or its successors to earn this grant was to build a canal about two miles in length, connecting Portage Lake with Lake Superior, and at one end thereof build two piers some 600 feet in length, extending into the lake. * * * The company, during the period allowed before forfeiture, did not perform the work required; it has never constructed any sufficient harbor or breakwater; the canal itself, as finally finished, was not "completed" and never has been completed as prescribed by the granting act; and the company has no equities entitling it to favorable consideration. * * *

"Your committee are of the opinion that the work as completed was so defective as to be practically a fraud upon the intention of Congress, and that the company failed, within the period of limitation, and ever since has failed to construct, within the meaning of the act of Congress, a breakwater, a harbor, or a ship canal of the specified dimensions."

That the United States never received any proper equivalent for its lands is shown by the well known fact that after the Congressional investigations, in order to make the canal available for ordinary navigation, the United States was obliged to purchase it from the company, equip it as a government canal and keep it in proper condition for use. This was provided for in the river and harbor bill of 1890, at a cost of $150,000, and the canal and its appurtenances are now government property.



ENGINES OF THE STEAMSHIP HOWARD. (SEE PAGE 9.)

BOOKS RECEIVED.

"Design, construction and maintenance of a marine boiler." This little pamphlet is No. 10 of the series published by the "Shipping World" of London, and sells on that side for three pence. It devotes some thirty pages to its subject matter, which is thoroughly illustrated by drawings.

"The Penberthy Bulletin," Vol III, No. 2. This monthly publication of the Penberthy Injector Co., is replete with good matter for the perusal of the engineer.

"The Rusting of Iron and Steel; how it may be prevented, and how it is promoted." This is another English pamphlet, well worthy of perusal, and calculated to save considerable money to the interested and caref reader.

Announcement is made of the publication, in a single convenient volume, of Parts I and II of "Drawing and Rough Sketching for Marine Engineers," by James Donaldson, consulting engineer.

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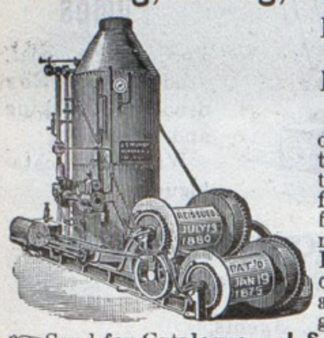

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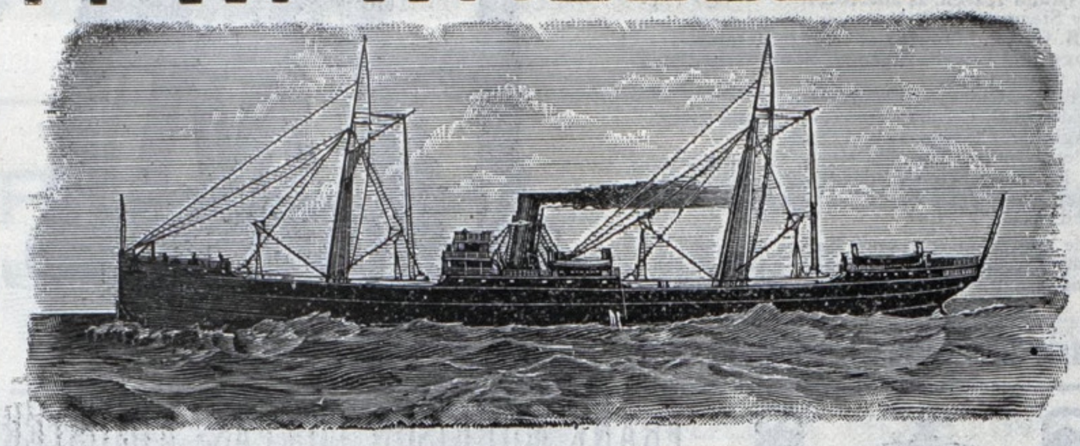

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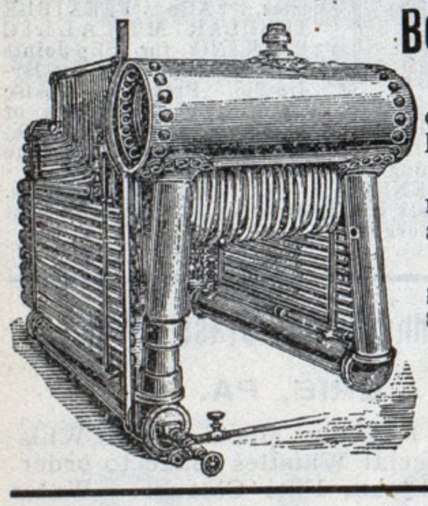

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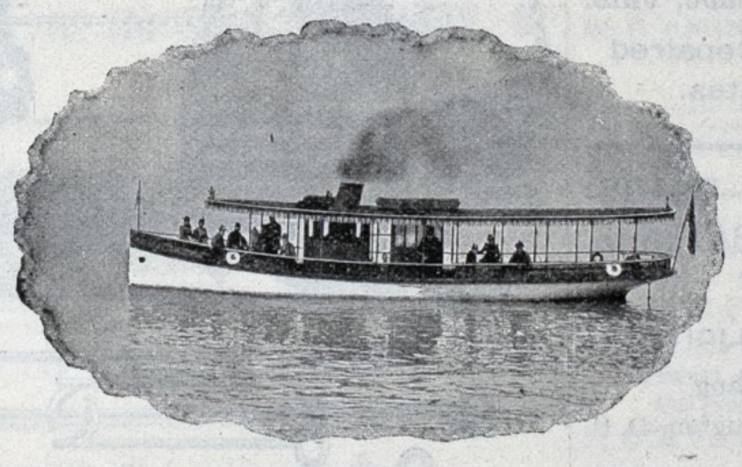

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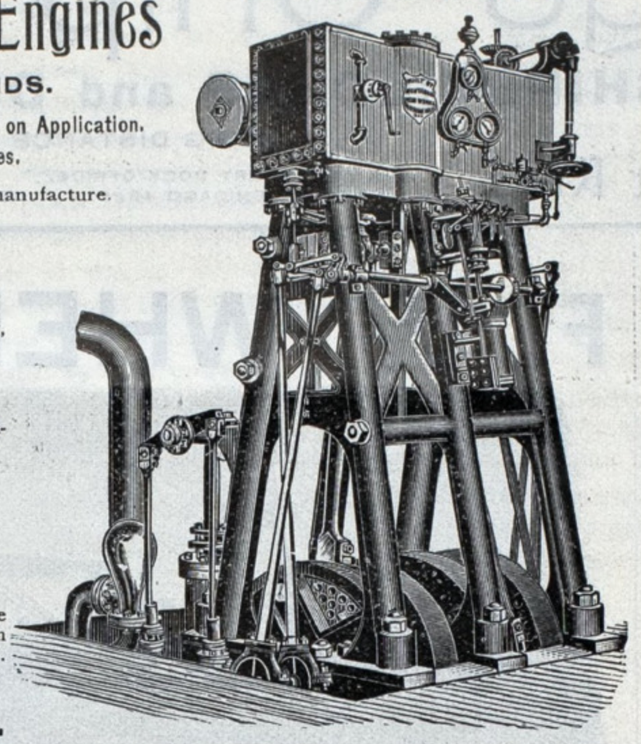

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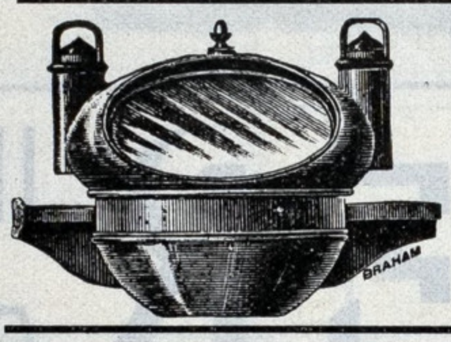

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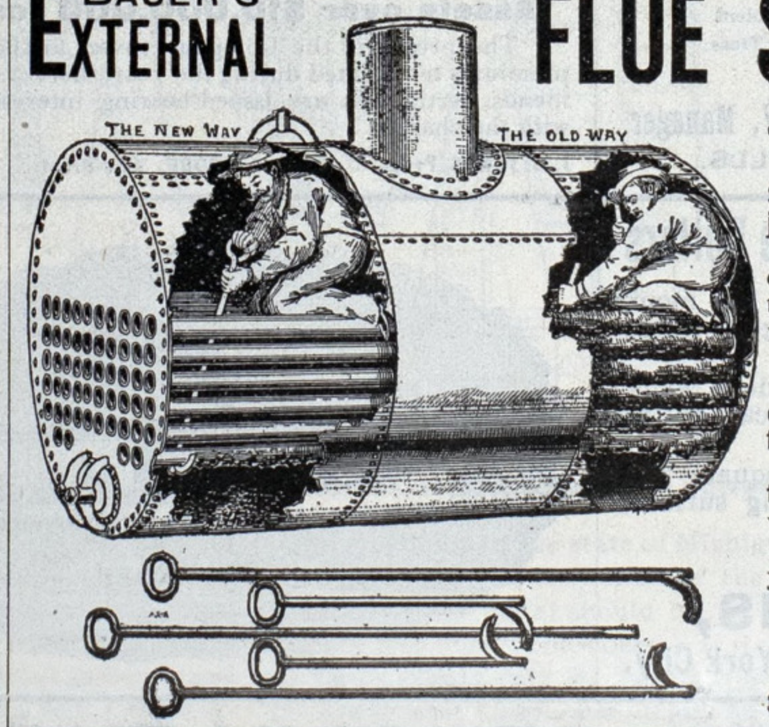

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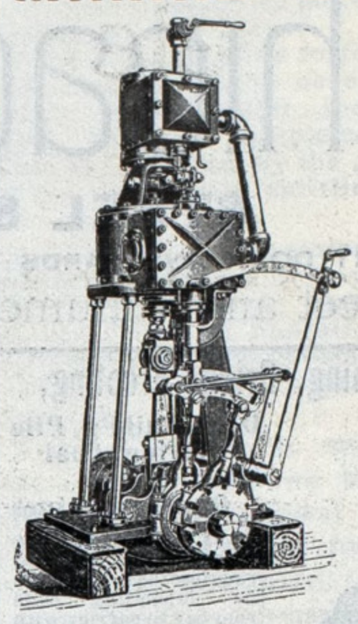

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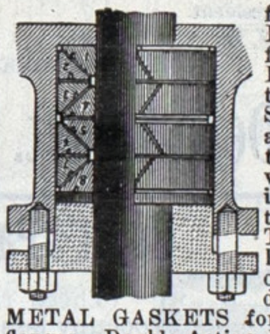

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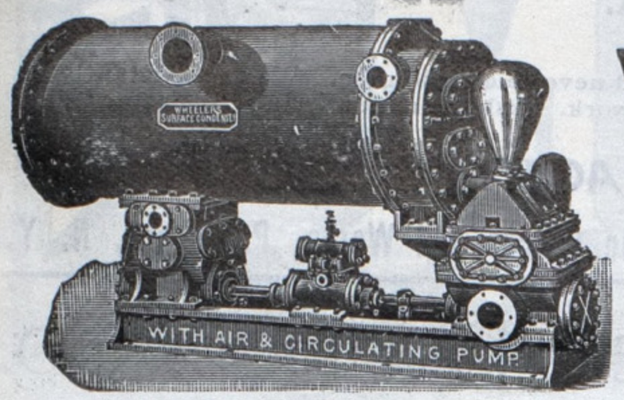

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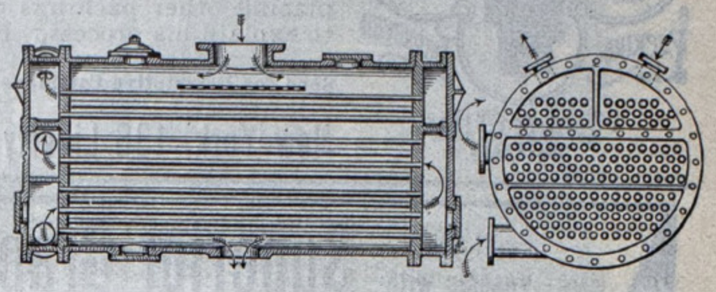

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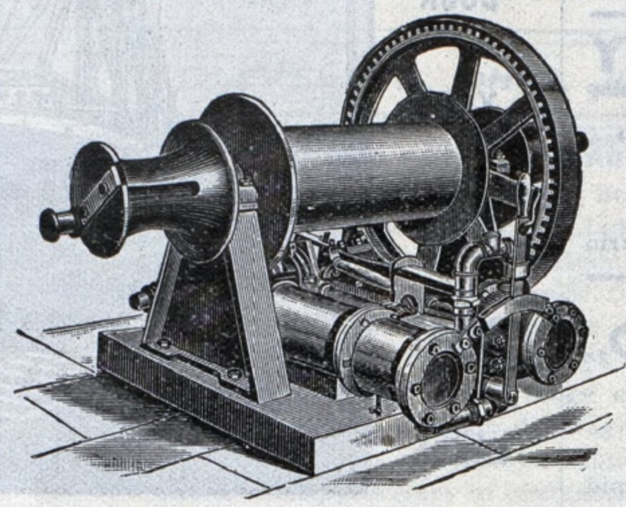

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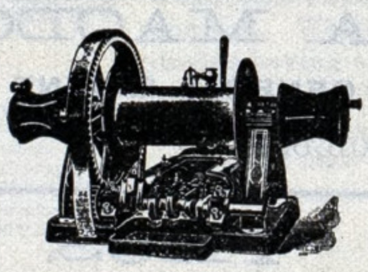

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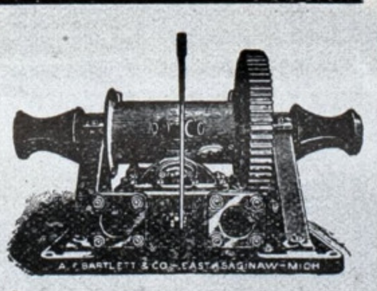

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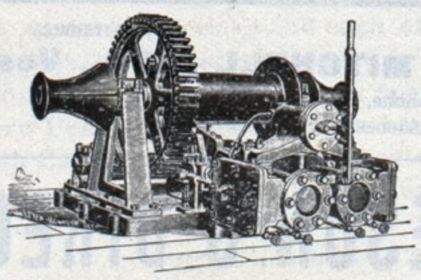

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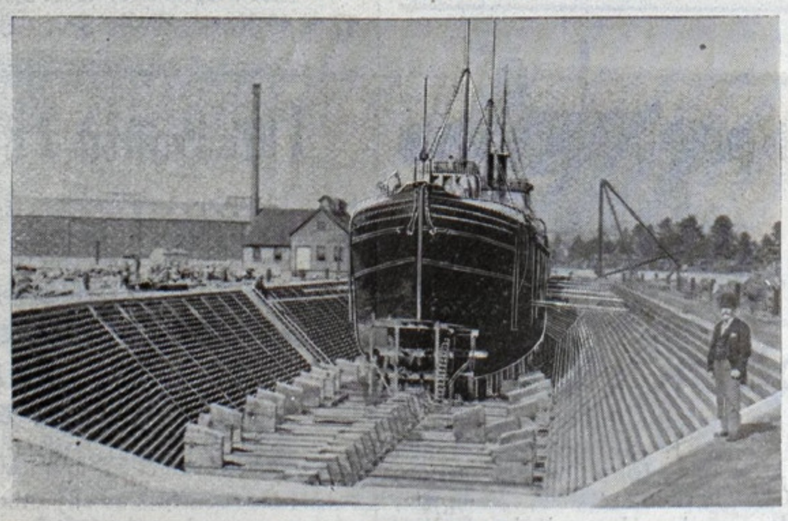

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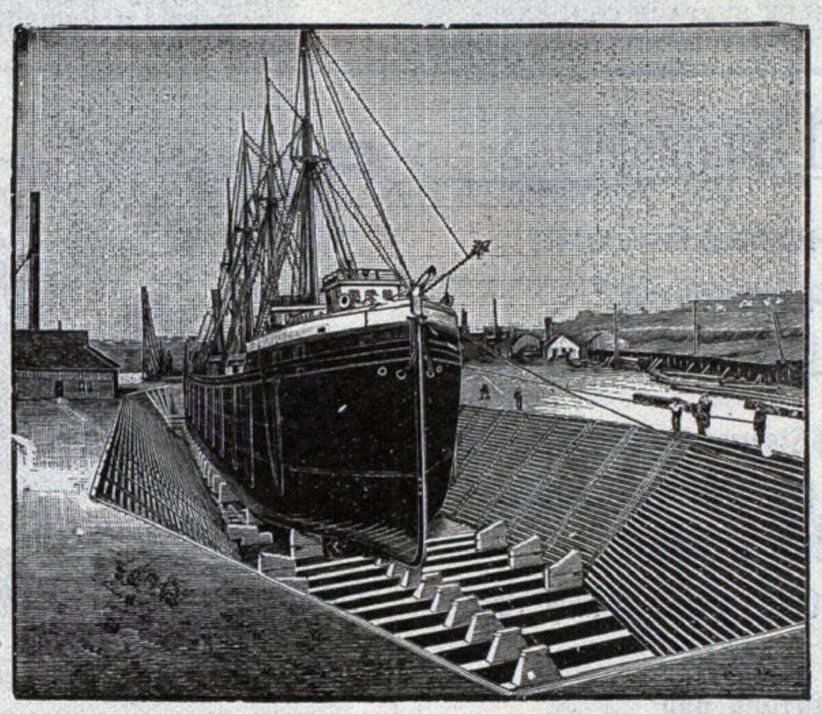

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